

ENVIRONMENTAL PROTECTION AGENCY
40 CFR Parts 80, 85 and 86
[AMS-FRL-]
RIN 2060-A123

**Control of Air Pollution from New Motor Vehicles:
Proposed Tier 2 Motor Vehicle Emissions Standards
and Gasoline Sulfur Control Requirements**

AGENCY: Environmental Protection Agency (EPA)

ACTION: Clarification of Proposed Rule, Provision of Supplemental Information and Request for Comment

SUMMARY: EPA published a Notice of Proposed Rulemaking (NPRM) on May 13, 1999, proposing a major program designed to significantly reduce the emissions from new passenger cars and light trucks, including pickup trucks, minivans, and sport-utility vehicles (the “Tier 2 program”). This program would provide for cleaner air by significantly reducing vehicle emissions that contribute to increased ambient levels of ozone and particulate matter (PM), as well as other types of pollution. The proposed program combines requirements for cleaner vehicles and requirements for lower levels of sulfur in gasoline. On May 14, 1999, a panel of the Court of Appeals for the District of Columbia Circuit ruled, among other things, that the recently-promulgated national ambient air quality standards (NAAQS) for ozone and PM represented unconstitutional delegations of authority, and remanded the record to EPA for further consideration. This document clarifies that the decision of the panel does not change EPA’s proposed requirements for a Tier 2 program and does not impact EPA’s proposed determination that the Tier 2 program is a necessary and appropriate regulatory program that would provide cleaner air and greater public health protection. This document also provides additional ozone modeling information that was not included in the Notice of Proposed Rulemaking. EPA welcomes comment on this document.

DATES:

Comments: We must receive your comments on the May 13, 1999 NPRM and on this document by August 2, 1999.

ADDRESSES:

Comments: You may send written comments in paper form or by E-mail. Send paper copies of written comments (in duplicate if possible) to Public Docket No. A-97-10 at the following address: U.S. Environmental Protection Agency (EPA), Air Docket (6102), Room M-1500, 401 M Street, S.W., Washington, D.C. 20460. If possible, we also encourage you to send an electronic copy of your comments (in ASCII format) to the docket by e-mail to A-and-R-Docket@epa.gov or on a 3.5 inch diskette accompanying your paper copy. If you wish, you may send your comments by E-mail to the docket at the address listed above without the submission of a paper copy, but a paper copy will ensure the clarity of your comments.

Please also send a separate paper copy to the contact person listed below. If you send comments by E-mail alone, we ask that you send a copy of the E-mail message that contains the comments to the contact person listed below.

EPA's Air Docket is open from 8:00 a.m. to 5:30 p.m., Monday through Friday, except on government holidays. You can reach the Air Docket by telephone at (202) 260-7548 and by facsimile at (202) 260-4400. We may charge a reasonable fee for copying docket materials, as provided in 40 CFR Part 2.

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SUPPLEMENTARY INFORMATION:

I. Introduction

A. Tier 2 Proposal

On May 13, 1999, EPA published in the Federal Register its proposal to reduce emissions from light-duty vehicles (LDVs) and light-duty trucks (LDTs). 64 FR 26004. The proposal would also significantly reduce sulfur content in gasoline. The proposed program would phase in beginning in 2004. The program is projected to result in reductions of approximately 800,000 tons of nitrogen oxides (NO_x) per year by 2007 and 1,200,000 tons by 2010. It would eventually result in reductions of about 70 percent in emissions of NO_x from LDVs and LDTs nationwide by 2020. In addition, the proposed program would reduce the contribution of vehicles to other serious health and environmental problems, including particulate matter, visibility problems, toxic air pollutants, acid rain, and nitrogen loading of estuaries.

EPA proposed the standards for LDVs and LDTs pursuant to its authority under section 202 of the Clean Air Act (CAA or the Act). In particular, section 202(i) of the Act provides

specific procedures that EPA must follow to determine whether Tier 2 standards for LDVs and certain LDTs¹ are appropriate beginning in the 2004 model year. Specifically, we are required to first issue a study regarding “whether or not further reductions in emissions from light-duty vehicles and light-duty trucks should be required” (the “Tier 2 study”). This study “shall examine the need for further reductions in emissions in order to attain or maintain the national ambient air quality standards.” It is also to consider (1) the availability of technology to meet more stringent standards, taking cost, lead time, safety, and energy impacts into consideration, and, (2) the need for, and cost effectiveness of, such standards, including consideration of alternative methods of attaining or maintaining the national ambient air quality standards. EPA must then submit the study as a Report to Congress. EPA submitted its Report to Congress on July 31, 1998.

Following the Report to Congress, EPA is required to determine by rulemaking whether (1) there is a need for further emission reductions; (2) the technology for more stringent emission standards from the affected classes will be available; and (3) such standards are needed and cost-effective, taking into account alternatives. If EPA makes affirmative determinations, then the Agency is to promulgate new, more stringent motor vehicle standards (“Tier 2 standards”). EPA proposed affirmative responses to the three questions above and proposed new standards. EPA also proposed standards for larger light-duty trucks (up to 8500 pounds GVWR) under the general authority of Section 202(a)(1) and under Section 202(a)(3) of the Act, which requires that

¹ LDTs with a loaded vehicle weight less than or equal to 3750 pounds.

standards applicable to emissions of hydrocarbons, NO_x, CO and PM from heavy-duty vehicles² reflect the greatest degree of emission reduction available for the model year to which such standards apply, giving appropriate consideration to cost, energy, and safety.

EPA proposed its gasoline sulfur controls pursuant to our authority under Section 211(c)(1) of the Clean Air Act. Under Section 211(c)(1), EPA may adopt a fuel control if at least one of the following two criteria is met: (1) the emission products of the fuel cause or contribute to air pollution which may reasonably be anticipated to endanger public health or welfare, or (2) the emission products of the fuel will significantly impair emissions control systems in general use or which would be in general use in a reasonable time were the fuel control to be adopted.

We proposed to control sulfur levels in gasoline based on both of these criteria. Under the first criterion, we believe that existing sulfur content in gasoline used in Tier 1 and LEV technology vehicles contributes to ozone pollution, air toxics, and PM at levels which can be reasonably expected to endanger public health or welfare. Under the second criterion, we believe that in the absence of gasoline sulfur control, sulfur in fuel that would be used in Tier 2 technology vehicles would significantly impair the emissions control systems expected to be used in such vehicles.

² LDTs that have gross vehicle weight ratings above 6000 pounds are considered heavy-duty vehicles under the Act. See section 202(b)(3). For regulatory purposes, we refer to these LDTs as “heavy light-duty trucks,” made up of LDT3s and LDT4s.

EPA promulgated new NAAQS for ozone and PM₁₀ in 1997. 62 FR 38652 (July 18, 1997); 62 FR 38856 (July 18, 1997). In proposing the Tier 2 standards, EPA proposed its determination of air quality need after considering data related to both the new NAAQS for ozone (the “8-hour ozone NAAQS”) and the pre-existing ozone NAAQS (the “1-hour ozone NAAQS”) as well as both the new PM₁₀ NAAQS and the pre-existing PM₁₀ NAAQS. Based on the data EPA believes the need for Tier 2 and sulfur control is strongly justified for both the new and pre-existing ozone and PM NAAQS.

B. Court Opinion

On May 14, 1999, a panel of the U.S. Court of Appeals for the District of Columbia Circuit found, by a 2-1 vote, that sections 108 and 109 of the Clean Air Act, as interpreted by EPA, represent unconstitutional delegations of Congressional power. American Trucking Ass’n, Inc., et al., v. Environmental Protection Agency, Nos. 97-1440, 1441 (D.C. Cir. May 14, 1999). The Court remanded the record to EPA. One judge dissented, finding that the majority’s opinion “ignores the last half-century of Supreme Court nondelegation jurisprudence.” Id., slip op. at 31.

The Court also ruled on other general issues and on issues specific to each NAAQS. The Court upheld EPA’s rules on some of these claims, but ruled against the Agency on others. Regarding the 8-hour ozone NAAQS, the Court found that the statute permits EPA to promulgate a revised ozone NAAQS and to designate the attainment status of areas. However, the Court

curtailed EPA's ability to require states to comply with the revised ozone NAAQS. Further the Court directed the Agency to determine whether tropospheric ozone has a beneficial effect, and if so, assess ozone's net adverse health effect. The Court also ruled that EPA's use of PM_{10} (rather than, for example, $PM_{10-2.5}$ ³) as an indicator of coarse particulate matter was arbitrary, in light of the separate NAAQS for $PM_{2.5}$, and vacated the new PM_{10} standard. The Court invited briefing on the appropriate remedy for the $PM_{2.5}$ NAAQS, as well as the status of the previous PM_{10} standard in light of the Court's ruling. In general, the Court did not find fault with the scientific basis for EPA's determinations regarding adverse health effects from ozone or PM.

EPA and the Department of Justice are currently evaluating the options concerning review of the panel's decision.

II. Effect of the Panel Decision on the Tier 2 Rule

EPA has received several questions regarding whether the decision of the panel has any effect on the Tier 2 proposal. As discussed below, EPA believes that, regardless of the eventual outcome of the Court case, the proposed Tier 2 Rule is justified as a necessary and important measure for reducing air pollutants and protecting public health. The proposed regulations continue to conform to the statutory requirements of the Act for the 1-hour ozone standard and the pre-existing PM_{10} NAAQS.

³ The Court described $PM_{10-2.5}$ as the measure of particulate matter with diameter between 2.5 and 10 micrometers.

A. Vehicle Standards

1. Proposed Determinations Under Section 202(i)

Under section 202(i), EPA must promulgate new standards for LDVs and LDTs weighing 3750 lbs. or less if EPA determines that: 1) there is a need for further reductions in emissions in order to attain or maintain the national ambient air quality standards; 2) the technology for more stringent emission standards from the affected classes is available; and 3) such standards are needed and cost-effective, taking into account alternative methods of attaining or maintaining the national ambient air quality standards. EPA proposed this finding in the May 13, 1999 NPRM. EPA continues to view its proposed finding appropriate under the CAA after consideration of the D.C. Circuit decision.

a. Air Quality Need

EPA continues to believe that there is a need for further reductions in emissions to attain or maintain the ozone and PM₁₀ NAAQS. The NPRM discussed this need criterion in relation to both the 8-hour and the 1-hour ozone standards and in relation to both the revised PM₁₀ and the pre-existing PM₁₀ standards. It is clear from the proposal that further reductions are needed to ensure achievement of the 1-hour ozone and pre-existing PM₁₀ NAAQS. As described in the preamble, 72 million people outside of California lived in 36 metropolitan areas and 2 counties designated nonattainment under the 1-hour ozone NAAQS as of August 10, 1998, while 13

million people outside of California lived in 68 counties designated nonattainment under the pre-existing PM₁₀ NAAQS. 64 of the counties, with a population of about 8 million people, are not included in current ozone nonattainment areas. Therefore, approximately 80 million people live in areas currently designated nonattainment under one or both of the NAAQS.

Though EPA projects that ozone control programs will reduce the number of these areas in the future, it is clear that, absent Tier 2 controls, nonattainment problems under the 1-hour ozone standard will continue well into the future. In the proposal, EPA projected future ozone levels by applying a “rollback method” to selected areas in the region analyzed by the Ozone Transport Assessment Group (OTAG).⁴ We used this method to estimate 2007 design values for both the 8-hour and 1-hour ozone standards. The 1-hour results indicated that eight metropolitan areas and two rural counties with a combined population of approximately 39 million are projected to have design values in excess of the 1-hour ozone NAAQS in 2007, after presuming implementation of controls from the Regional Ozone Transport Rule (ROTR).⁵ As indicated in Table 1, these areas would be scattered throughout the OTAG region, including areas in Texas,

⁴ OTAG evaluated a region that included all or part of the easternmost 37 states.

⁵ The design value is the calculated ozone level, based on ozone measurements in the area, that is compared to the NAAQS to determine compliance with the standard.

Louisiana, Indiana and throughout the northeast, indicating that nonattainment of the 1-hour ozone standard would remain a substantial and widespread concern.

Table 1. Metropolitan areas/ rural counties with design values projected to exceed the 1-hour standard in 2007 using rollback method with ROTR controls but without Tier 2/Sulfur Controls.

Name	Design Value (ppb)	Pop'n.
Iberville County LA	132	31,049
La Porte County IN	131	107,066
Beaumont-Port Arthur, TX MSA	129	361,218
Hartford, CT MSA	125	1,157,585
Houston-Galveston-Brazoria, TX CMSA	175	3,731,029
Longview-Marshall, TX MSA	129	193,801
Memphis, TN-AR-MS MSA *	125	1,007,306
New York-Northern New Jersey-Long Island, NY-NJ-CT-PA	136	19,549,649
CMSA		
Philadelphia-Wilmington-Atlantic City, PA-NJ-DE-MD CMSA	126	5,893,019
Washington-Baltimore, DC-MD-VA-WV CMSA	126	6,726,395
	total population	38,758,117
	# of metro areas	8
	metro pop.	38,620,002
	# of counties	2
	county pop.	138,115

* = 1-hour ozone NAAQS no longer applies in a portion of the MSA

The OTAG analysis region did not include California, and therefore EPA does not have comparable projections of future air quality in that state. It is important to note that California has under its authority designed and implemented a vehicle and fuel control program, and therefore EPA did not propose to apply the proposed Tier 2/gasoline sulfur program in California. However, in its proposal EPA noted in qualitative terms the importance of the Tier 2 and sulfur control reductions to California's efforts to reach attainment with the 1-hour ozone

standard. Nine areas in California currently designated as nonattainment, and two counties currently designated as being in attainment, with a population of approximately 30 million, have current design values above the 1-hour ozone NAAQS. It appears that some California areas with an attainment deadline of 1999 will not meet that date, and therefore will require additional emission reductions to attain. Attainment of the 1-hour standard in the remaining areas by their various later attainment dates remains the goal of California and EPA, but will be challenging to accomplish. Though this regulation does not directly regulate California vehicles, ozone levels in California are reduced through reductions in emissions from vehicles sold outside California that subsequently enter California temporarily or permanently. According to California, about 7 to 10 percent of all car and light truck travel in California takes place in vehicles originally sold outside of California. In fact, the state of California has recently filed an update to its State Implementation Plan for the South Coast Air Basin that expressly claims that the Tier 2 program will lead to four tons of reduced NO_x emissions per day in the South Coast area in 2010.⁶ Furthermore, low gasoline sulfur levels would prevent poisoning of the catalysts of California vehicles that travel outside California and later return to the state.

The 1-hour ozone design values for 2007 presented in Table 1 above were based on an analysis approach called the “rollback method” that combines modeling results for future years with recent measured ozone levels to project future ozone levels. The general concept in this method is to first determine the design value from the monitoring data for a three-year base

⁶ California Air Resources Board, Executive Order G-99-037, May 20, 1999, Attachment A, p.6-7, 10. The four tons per day NO_x reductions cited, represents only a small fraction of the emission reductions needed in the South Coast to attain the NAAQS.

period, then estimate the percentage reduction between the base year and a future year (the year 2007 is used in Table 1) using the regional ozone modeling system. Finally, the percentage reduction is applied to the ambient design value to project the design value for the future year. A more detailed discussion of this approach appears in the draft RIA.

The rollback approach was applied to both the 1-hour or 8-hour ozone predictions in the Tier 2/gasoline sulfur proposal. EPA has more commonly used the “exceedence method,” which estimates future ozone levels from the modeling results more directly. The exceedence approach is more consistent than the rollback method with EPA’s guidance to states regarding technical methods used to demonstrate attainment with the existing 1-hour ozone standard. In this method, the predicted ozone concentrations in 2007 are compared to the ozone standard of interest to characterize whether the area is likely to experience an exceedence of the ozone standard in the future. A more complete description of this guidance can be found in "Guidance on Use of Modeled Results to Demonstrate Attainment of the Ozone NAAQS", U.S. EPA (1996), EPA-454/B-95-007, (June 1996).

In light of the recent Court decision, EPA is providing a more thorough presentation of the available ozone modeling data on the need for additional emission reductions to meet the 1-hour ozone standard, to provide additional information for public comment.

In the ROTR, EPA used the exceedence method to determine whether designated 1-hour nonattainment areas would be likely to experience exceedences in 2007, considering the effects of growth and emission control measures. EPA used an exceedence approach to estimate the impacts of controls on 1-hour ozone concentrations because this approach is more consistent with the 1-hour standard than a rollback approach. The form of the 1-hour standard considers the number of exceedences at a monitoring site over a three-year period. Year-to-year variations in meteorological conditions can result in considerable variation in the number of exceedences at a given location across successive three-year periods. Using the exceedence approach based on modeling for specific ozone episodes provides for a consistent set of meteorological conditions over which to evaluate the effects of control strategies on 1-hour exceedences. In moving to an 8-hour standard, EPA changed the form of the standard from an exceedence based approach to an average concentration based approach. Specifically, 8-hour design values are calculated as the 3-year average of the 4th highest 8-hour value in each year at a monitoring site. As a result of this multi-year averaging, the effects of variations in year-to-year meteorological conditions are reduced and thus, 8-hour design values are likely to be more stable over time than 1-hour exceedences. The rollback method, which is based on the average ozone reductions calculated from model predictions, is consistent with the form and temporal stability of 8-hour design values.

Consistent with our guidance on 1-hour attainment demonstrations and with our reliance on the exceedence approach in the ROTR, EPA has now analyzed the air quality modeling results using the exceedence method. The results of this analysis are presented as supplemental

information that bears on our proposed finding regarding the need for additional reductions in ozone precursor emissions to help areas attain the NAAQS.

Table 2 shows results of the exceedence method for the 1-hour standard. It lists 17 current nonattainment areas that are projected to experience exceedences of the 1-hour standard in 2007, even after implementation of the ROTR, the National Low Emission Vehicle Program, the 2004 highway diesel engine standards, the Phase II nonroad diesel engine standards, and other federal emission control measures.⁷ These results indicate that there are more, and more geographically dispersed, metropolitan areas which need further ozone precursor emission reductions to meet the 1-hour ozone NAAQS, than was indicated by the rollback method as reported in Table 1. The population of these 17 areas exceeds 70 million. Details of this analysis are given in a memo to Air Docket A-97-10, titled “Exceedence Method Analysis of Photochemical Modeling in Support of Tier 2/Sulfur.”

Table 2. Metropolitan areas projected to experience exceedences of the 1-hour standard in 2007 or 2010, as applicable, with ROTR controls but without Tier 2/Sulfur Controls. Does not include areas for which the 1-Hour Ozone NAAQS no longer applies.

⁷ The deadline for submission of state implementation plans under the ROTR was recently stayed by a panel of the Court of Appeals for the D.C. Circuit pending further review. EPA believes that the ROTR is fully consistent with the Clean Air Act and should be upheld. However, it should be noted that in the absence of the controls mandated in the ROTR, the emission reductions from the Tier 2 program would be even more necessary for compliance with the NAAQS.

<i>Metropolitan Area</i>	<i>1990 Population</i>
Atlanta, GA MSA	2,959,500
Baton Rouge, LA MSA ^a	528,261
Beaumont-Port Arthur, TX MSA ^a	361,218
Birmingham, AL MSA	839,942
Chicago-Gary-Kenosha, IL-IN-WI CMSA	8,239,820
Cincinnati-Hamilton, OH-KY-IN CMSA ^b	1,817,569
Dallas-Fort Worth, TX CMSA ^a	4,037,282
Hartford, CT MSA	1,157,585
Houston-Galveston-Brazoria, TX CMSA ^a	3,731,029
Los Angeles-Riverside-San Bernardino CA CMSA ^{a,c}	13,000,000
Louisville, KY-IN MSA	949,012
Milwaukee-Racine, WI CMSA	1,607,183
New York-Northern New Jersey-Long Island, NY-NJ-CT-PA CMSA	19,549,649
Philadelphia-Wilmington-Atlantic City, PA-NJ-DE-MD CMSA	5,893,019
Springfield, MA MSA	587,884
St. Louis, MO-IL MSA	2,492,348
Washington-Baltimore, DC-MD-VA-WV CMSA	6,726,395
Total Population	74,479,686
Number of Areas	17

^a = These areas are not subject to the ROTR and were modeled accordingly.

^b = 1-hour ozone NAAQS proposed to no longer apply.

^c = The attainment date considered for Los Angeles-Riverside-San Bernardino is 2010. For other listed areas, the date considered is 2007. For the former area, the possibility of 2010 exceedences without Tier 2/Sulfur controls is inferred from the inclusion of these reductions in the most recently submitted SIP update. For other areas, the prediction is based on the exceedence method applied to regional ozone modeling results.

Our preliminary analysis indicates that the proposed Tier 2/Sulfur program would reduce the number and severity of ozone exceedences in areas currently designated nonattainment under the existing 1-hour ozone standard. We expect to conduct further analysis of the impact of the Tier 2/sulfur program on exceedences of the current 1-hour ozone standard as part of our analysis for the final rule.

EPA invites comment on the appropriateness of using the exceedence and/or rollback method in this rulemaking for purposes of analyzing future compliance with the 1-hour ozone NAAQS.

As discussed at length in the proposed rule, emissions from LDVs and LDTs will represent a large percentage of emissions of ozone precursors once the ROTR is implemented. To the extent that significant additional reductions in precursors are needed for the areas discussed above to attain or maintain the 1-hour ozone NAAQS, EPA believes that reductions from LDVs and LDTs in particular will be necessary.

The NO_x and sulfur dioxide emissions from LDVs and LDTs also contribute to elevated particulate matter levels as these emissions are transformed by physical and chemical processes in the atmosphere. The resulting particulate matter contributes to current and projected nonattainment with the pre-existing PM₁₀ standard. In the NPRM, EPA presented its projection that 33 counties outside of California, with a population of approximately eleven million, and twelve counties in California, with a population of about seven million, would not be in attainment with the pre-existing PM₁₀ standard in 2010, absent further emission reductions⁸. These projections were made during the rulemaking that established the revised PM₁₀ standard.

⁸ The predictions of 2010 nonattainment under the pre-existing PM₁₀ NAAQS were made on the basis of individual counties, not metropolitan areas. The methods used to project PM concentrations in 2010 from 1990 emissions and ambient concentration data introduce several sources of uncertainty. Uncertainties exist regarding emission inventory estimates from human and natural sources, monitoring data, and the models used to account for physical and chemical processes in the atmosphere.

The following additional information is presented regarding current and projected attainment of the pre-existing PM₁₀ standard.

Twenty-one of the 45 counties which EPA projected to be in nonattainment with the pre-existing PM₁₀ standard in 2010 are not part of metropolitan areas. In these 21 rural counties, PM₁₀ levels are likely to be dominated by natural events (volcanoes, wind-blown dust, or wildfires) or by single large industrial sources of PM₁₀. As such, the PM and PM precursor reductions from the Tier2/Sulfur proposal are less likely to materially affect their attainment and maintenance of the standard, although EPA invites comment on this issue.

Table 3 lists the 24 urban counties projected to be in nonattainment in 2010. For two areas (Lubbock Co. and Spokane Co.) there is specific indication that natural events are responsible for the high PM₁₀ levels. Also, while Philadelphia was projected to be in nonattainment in this analysis, additional emission reductions have since occurred there through a source shutdown, which may result in PM₁₀ attainment in 2010. The remaining 21 urban counties contain about 15 million people. The reductions in PM and PM precursors resulting from the Tier 2/Sulfur rule would help to reach and maintain the NAAQS in such areas. Of these 21 counties and 15 million people, 17 counties and 9 million people are not included in the projected ozone exceedence areas listed in Table 2 above.

Table 3. Counties, in metropolitan areas only, projected not to attain the pre-existing PM₁₀ standard in 2010.

<i>Name</i>	<i>Population</i>
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	(1990)
Bernalillo Co NM	480,577
Kern Co CA	369,608
Scott Co IA	150,973
Lane Co OR	282,912
Fresno Co CA	667,000
Harris Co TX ^a	2,818,199
Clark Co NV	741,368
Riverside Co CA ^a	1,170,413
San Bernardino Co CA ^a	1,418,380
Lubbock Co TX ^b	222,636
Ouachita Par LA	142,938
Davidson Co TN	510,784
New Haven Co CT ^a	804,219
Cass Co NE	21,318
Philadelphia Co PA ^{a,c}	1,585,577
Maricopa Co AZ	2,122,101
Utah Co UT	263,590
Pennington Co SD	81,343
Washoe Co NV	254,667
Yolo Co CA	141,000
San Diego Co CA	2,498,016
Santa Cruz Co CA	229,734
Spokane Co WA ^d	361,333
Hancock Co WV	35,233
Total Population	17,373,919
Number of Areas	24
Population of 21 Areas Without Specific Indication of Natural Events or Additional Emission Reduction	15,204,373
Population of 17 Areas Without Specific Indication of Natural Events or Additional Emission Reduction, and Not Listed in Table 2	8,993,162
^a Counties in areas also projected to exceed the 1-hour ozone standard (listed in Table 2 above).	
^b PM10 levels in excess of the NAAQS in Lubbock Co. TX are considered to be due to fugitive dust from agricultural land. The area is implementing USDA guidelines on control of fugitive dust.	
^c Monitored PM10 levels in excess of the NAAQS in Philadelphia Co. PA are considered to have been due to a lead smelting operation which has ceased operation.	
^d The state of Washington has submitted a Natural Events Action Plan for Spokane Co.	

Based on the above, EPA reiterates its proposed finding that there is a need for further reductions in emissions in order to attain or maintain the NAAQS, even when consideration is

limited to the one-hour ozone and the pre-existing PM₁₀ NAAQS. A total of approximately 83 million people living in 17 metropolitan areas and 17 individual metropolitan counties projected to not be in attainment of either or both of these standards would be helped by Tier 2/Sulfur controls. We invite comment on all the information presented in this section of this notice.

b. Technological Feasibility and Cost-Effectiveness

EPA's NPRM proposed a determination that technology would be available for meeting emission standards more stringent than current levels. Indeed, the NPRM proposed a finding that the standards are fully feasible for LDVs and LDTs. The Court's decision does not concern this issue and therefore does not affect EPA's rationale.

The Court decision also does not change EPA's proposed determination regarding the need for and relative cost-effectiveness of the Tier 2 standards. The Tier 2 program, costing between \$1213 and \$2134 per ton of NO_x and HC reduced, compares favorably to other possible control programs that might be used to meet the ozone NAAQS. The Tier 2/Gasoline Sulfur proposal made a summary comparison was made to the over 50 technologies identified in the ozone NAAQS revision rulemaking as alternative means for reducing NO_x and VOC emissions to meet the 1-hour and 8-hour NAAQS. 64 FR 26004, 26074. The average cost effectiveness of these technologies varied from hundreds of dollars per ton to tens of thousands of dollars per ton. If all of the technologies identified for the ozone NAAQS analysis costing less than \$10,000/ton were implemented nationwide, they would produce NO_x emission reductions of about 2.9

million tons per year, compared to the 2.8 million tons per year for Tier 2 once the program is fully implemented. As summarized in the Tier 2/sulfur NPRM, we found that these additional local emission control measures only brought 2 of the 19 projected 8-hour ozone nonattainment areas into attainment. While not mentioned in the Tier 2/sulfur NPRM, this same analysis showed that these additional local emission control measures only brought 1 of the 9 projected 1-hour ozone nonattainment areas into attainment. Thus, there appears to be a strong need for the Tier 2 and sulfur standards, in order for local areas to achieve, not only the 8-hour ozone NAAQS, but also the 1-hour ozone NAAQS. In addition, as discussed in the NPRM, the cost-effectiveness of the Tier 2 program is within the range of the cost-effectiveness of other mobile source control programs that have already been promulgated. Given the continuing need for further emission reductions to comply with the 1-hour NAAQS discussed above, we believe that the Tier 2/gasoline sulfur control proposal is a cost effective approach for attaining and maintaining the NAAQS.

The magnitude of emission reductions that can be achieved by this program would be difficult to achieve from any other source category. Given the percentage of emissions of ozone precursors that come from LDVs and LDTs and the possible alternative control programs areas may use to meet the ozone standard, it would be difficult to attain and maintain the ozone NAAQS (1-hour or 8-hour) in a cost-effective manner without substantial reductions from LDVs and LDTs.

Moreover, the monetized benefit estimates used for the benefit cost analysis of the Tier 2/gasoline sulfur proposal are not affected by the Court action. 64 FR 26078-79 (May 13, 1999). The estimates of benefits are based on (a) our estimates of the emission reductions that the rule would produce, (b) our projections of the air quality changes that would result from these emission reductions, (c) the changes in various health and welfare endpoints caused by the air quality changes, and (d) the value of reductions in those health and welfare endpoints. None of these pieces of the benefits analysis are dependent upon the specific level of the NAAQS. Emission reductions and related air quality changes are determined by the requirements of the rule itself. The changes in health and welfare effects are determined solely from the underlying scientific studies relating effects and endpoint changes. Similarly, the valuation of changes in these end points is derived directly from the scientific literature. None of these factors depends on the specific NAAQS level.

2. Section 202(a)

EPA's proposed vehicle standards for LDTs above 3750 pounds are governed by the general provisions of section 202(a)(1) and (2) and provisions of section 202(a)(3).⁹ Under section 202(a)(1), EPA shall promulgate "standards applicable to the emission of air pollutant from any class ... of new motor vehicles ..., which in his judgment cause, or contribute to, air pollution which may reasonably be anticipated to endanger public health or welfare." Under

⁹The proposed evaporative standards are governed by section 202(a) and 202(k).

section 202(a)(2), such standards must provide appropriate lead time, “giving appropriate consideration to the cost of compliance within such period.” Section 202(a)(3), applicable to heavy-duty vehicles, requires EPA standards to “reflect the greatest degree of emission reduction achievable through the application of technology which the Administrator determines will be available for the model year to which such standards apply, giving appropriate consideration to cost, energy, and safety factors associated with the application of such technology.”

The Court’s decision does not address these provisions, and does not change EPA’s belief that the proposed Tier 2 standards are lawful and appropriate under these criteria. As noted above and in the proposal, the standards in this proposed rule would reduce emissions that cause or contribute to ozone, particulate matter, air toxics, acid rain, and other air pollution. We believe that the information provided in the NPRM, as well as the information that EPA relied on in setting the NAAQS for ozone and PM, will support a conclusion that these kinds of air pollution can be reasonably anticipated to endanger the public health or welfare.

Based on this and the information presented in the NPRM on the technological feasibility and cost of emissions controls to reduce vehicle emissions, EPA continues to believe that it is appropriate to propose these emissions standards to reduce vehicle emissions of VOCs, NO_x and PM, given that they cause or contribute to air pollution which may reasonably be anticipated to endanger public health or welfare. Specifically with respect to ozone and PM, this is the case even if one only considers reductions needed to achieve or maintain ambient air quality at the levels of the pre-existing NAAQS. Moreover, the Court’s opinion does not address EPA’s

determination that the 1-hour ozone standard fails to protect health with an adequate margin of safety,¹⁰ and further reductions are needed. Further, the discussion above shows that, in the absence of the Tier 2 program, healthful air quality is not achieved even if we look only at the pre-existing NAAQS. Moreover, as discussed above, the Court's opinion does not change EPA's belief that the standards proposed are technologically feasible in the time permitted, giving appropriate consideration to cost. We seek public comment on all aspects of this supplemental notice, including the continuing need for the proposed vehicle emission reductions.

B. Gasoline Sulfur Restrictions

Under Section 211(c)(1), EPA may adopt a fuel control where one or more of the following conditions apply: (1) the emission products of the fuel cause or contribute to air

¹⁰ The one-hour standard for ozone was set 20 years ago, in 1979, based on the science available at that time. 44 FR 8202 (1979). EPA next reviewed the ozone NAAQS in 1993, in compliance with a court-ordered schedule, and concluded that revision was not appropriate at that time. 58 FR 13008 (1993). EPA recognized that its 1993 decision was based on out-of-date criteria that did not include a large emerging database suggesting the one-hour standard might need revision. *Id.* at 13013, 13018. In light of the court-ordered deadline EPA determined to complete the review and proceed "as rapidly as possible" with the next review to assess the new science. *Id.* at 13008, 13015-13016. Even during the course of the 1993 review, EPA's science advisors, the Clean Air Scientific Advisory Committee (CASAC), concluded that the one-hour standard provided "little, if any, margin of safety." 61 FR 65716, 65727 (1996). In addition, several members of the CASAC panel recommended that consideration should be given to a lower 1-hour level of 0.10 ppm to offer some protection against effects for which there was preliminary information at that time of associations with 8-hour exposures to ozone. *Id.* The criteria supporting the 1997 revision of the ozone NAAQS confirmed that the one-hour standard was inadequate to protect public health with an adequate margin of safety. For example, the criteria document stated that there is "strong evidence that ambient exposures to ozone can cause significant exacerbations of pre-existing respiratory disease in the general public at concentrations below 0.12 ppm." U.S.EPA (1996), *Air Quality Criteria for Ozone and Related Photochemical Oxidants*, EPA/600/P-93/004abcF, p. 7-171.

pollution which may reasonably be anticipated to endanger public health or welfare, or (2) the emission products of the fuel will significantly impair emissions control systems in general use or which would be in general use were the fuel control to be adopted. The Court's decision does not address these provisions and does not change our view that the proposed gasoline sulfur standards are lawful and appropriate under this criterion.

Under the first criterion, we believe that emissions products related to sulfur in gasoline used in Tier 1 and LEV technology vehicles contribute to ozone pollution, air toxics, and PM. The information provided in the NPRM and in this notice, as well as the information that EPA relied on in setting the NAAQS for ozone and PM, support the conclusion that emissions from Tier 1 and LEV technology vehicles contributes to these kinds of air pollution, and that these kinds of air pollution can be reasonably anticipated to endanger the public health or welfare. The information provided in the NPRM indicates that when Tier 1 and LEV technology vehicles are operated on higher-sulfur fuel, emissions which give rise to ozone, air toxics, and PM pollution increase substantially. The sulfur levels proposed in the NPRM would result in substantial reductions in these emissions (as discussed more fully below) and the resulting ozone, air toxics, PM, and other air quality problems.

Based on this and the information presented in the NPRM on the technological feasibility and cost of controls to reduce gasoline sulfur, EPA believes that it is appropriate to propose the gasoline sulfur standards to reduce vehicle emissions of VOCs, NO_x and PM, given that they cause or contribute to air pollution which may reasonably be anticipated to endanger public

health or welfare. EPA believes that reductions in gasoline sulfur would provide substantial reductions in these emissions, and would achieve significant reductions soon after implementation, because reducing sulfur in gasoline would immediately reduce emissions from the existing vehicle fleet. Specifically with respect to ozone and PM, this is the case even if one only considers reductions needed to achieve or maintain ambient air quality at the levels of the pre-existing NAAQS. Moreover, the Court's opinion does not question EPA's determination that the 1-hour ozone standard has little or no margin of safety, and further reductions are needed. As required by Section 211(c)(2)(A) prior to regulation under the public health or welfare criterion of Section 211(c)(1), EPA considered all relevant medical and scientific evidence available relating to the emissions impact of sulfur in gasoline, including its impact on emissions of ozone precursors, PM, and air toxics. EPA also considered whether vehicle standards under Section 202 would be technologically and economically feasible. For the reasons discussed above, the Court's opinion does not change our analysis under Section 211(c)(2)(A).

Moreover, the Court's decision is not relevant to the second criterion of Section 211(c)(1). Under this criterion, EPA is proposing the sulfur standards based on our belief that sulfur in the gasoline that will be used in Tier 2 technology vehicles will significantly impair the emissions control systems expected to be used in such vehicles. The Court's decision does not affect this proposal, as EPA's position on the sulfur sensitivity of Tier 2 emissions control technology is based on a technical analysis of the capability of vehicle emission control technology.

As required by Section 211(c)(2)(B) prior to regulation under this criterion of Section 211(c)(1), EPA also considered the available scientific and economic data, including an analysis of costs and benefits of emissions control systems that are or will be in general use and require low sulfur fuel, and those that are or will be in general use and do not require low sulfur fuel. As described in Appendix D of the Regulatory Impact Analysis, EPA believes that there are no emissions control systems for gasoline vehicles meeting the proposed Tier 2 standards that would not require low sulfur fuel, and therefore believes that the benefits that would be achieved through implementation of the proposed Tier 2 and gasoline sulfur programs cannot be achieved through the use of emission control technology that is not sulfur-sensitive. The efficiency of catalytic converters used in gasoline-powered vehicles is very sensitive to the level of sulfur in gasoline. As discussed in the Regulatory Impact Analysis supporting the rule, NO_x emissions increase by about 15 % in Tier 1 vehicles as gasoline sulfur levels rise from 40 to 330 ppm. LEV technologies are even more sensitive to sulfur, with NO_x increases of 40-130% measured in testing programs. NLEV vehicles are now being sold in the northeastern United States and will be sold in the remainder of the United States by 2001. A substantial portion of the NO_x emission reduction benefits from the gasoline sulfur program would arise immediately as a result of the reductions of emissions in the current fleet in these early years. As described in Section II.A.1.b. above, the Court's decision does not affect EPA's analysis of the costs and benefits of the Tier 2 program or the gasoline sulfur program. Moreover, the Court's decision is not relevant to EPA's analysis of whether vehicle emissions control technology that is not sulfur-sensitive will be in general use.

EPA's proposal also proposes that the sulfur standards are feasible in the lead time provided. The Court's decision does not concern this issue and therefore does not disturb EPA's rationale.

III. Public Comment

We seek comments on all aspects of this Supplemental Notice, including the continuing need for Tier 2 emission standards for vehicles and reducing sulfur in gasoline to attain and maintain the NAAQS. In addition, we have just completed four public hearings around the country on the Tier 2 proposal and continue to welcome written public comments on the Tier 2/Gasoline sulfur proposal until the closing date of August 2, 1999. Please see the Addresses section in this notice for how and where to send any comments on the Tier 2 Proposal, as well as any comments you may have on the supplemental information provided in today's document.

Dated: _____

Carol M. Browner,
Administrator.